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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/643,792

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David K. Mesecher

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10/28/2004

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EXAMINER

PEZZLO, JOHN

ART UNIT

PAPER NUMBER

2662

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/643,792	Applicant(s) MESECHER ET AL.	
	Examiner John Pezzlo	Art Unit 2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1April2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

I. Claims 1-16 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,055,231. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the claims of the application and the claims of the patent are directed to the same subject matter. For example, both are directed to a CDMA receiver, which receives an RF carrier frequency and demodulates the RF carrier to extract a received information signal. Both are directed to correcting phase errors of the received information signal and both perform the correction by recursively adjusting the phase of the correction signal such that the phase of the correction signal is substantially equal to the reference phase.

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The claims of the application do not expressly disclose the same language for correcting the phase as the patent.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that both the application and the patent are directed to the same subject matter and are both solving the same problem using the same techniques.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

II. Claims 1-9 and 11-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Schiff (US 4,630,283) hereinafter Schiff.

1. Regarding claims 1 and 23 – Schiff discloses a receiver for receiving a CDMA communication signal transmitted on an RF carrier frequency and demodulating said RF carrier frequency to provide a received information signal, refer to the abstract and Figures 1 and 5.

Schiff discloses the receiver including a system for correcting phase errors in an information signal which has been modulated on said RF carrier frequency, refer to Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53.

Schiff discloses circuitry for generating a mixing signal and for combining said mixing signal with said information signal to produce a correction signal, refer to Figures 5 and 6 and column 7 lines 5 to 68 and column 8 and column 9 lines 1 to 45.

Schiff discloses an analyzer for analyzing the phase of said correction signal and generating an error signal based on the deviation of the analyzed phase from a reference phase, refer to Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 11 lines 14 to 68 and columns 12 and 13 and column 14 lines 1 to 37.

Schiff discloses a bandwidth controller which recursively adjusts the phase of said correction signal such that the phase of said correction signal is substantially equal to said reference phase, refer to Figures 5 and 7 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14 lines 1 to 37.

Schiff discloses said bandwidth controller selecting a bandwidth within an adjustable range based on said correction signal, estimating an offset by interrogating said error signal and modifying said correction signal by said offset, refer to Figures 5 and 7 and 9 and 10 column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14.

2. Regarding claims 2 and 13 and 22 – Schiff discloses wherein said correction signal comprises an I (in-phase) component and a Q (quadrature) component, and said analyzer further comprises a look-up table for determining the phase of said correction signal; said look-up table accepting said correction signal and generating said error signal, refer to Figures 5 and 7 and 9

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and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14 lines 1 to 37.

3. Regarding claims 3 and 11 and 14 and 19 and 21 – Schiff discloses wherein said analyzer further comprises a normalizer for determining the magnitude of the I component and the magnitude of the Q component, selecting the larger of said magnitudes, and dividing both of said magnitudes by said larger magnitude to output a pseudonormalized correction signal, refer to Figures 5 and 7 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14 lines 1 to 37.

4. Regarding claims 4 and 7 and 15 and 17 – Schiff discloses wherein said bandwidth controller further includes a bandwidth calculation mechanism which accepts said correction signal and outputs a bandwidth signal based upon a transfer function, refer to Figures 7a and 7b and column 9 line 46 to column 11 line 13 and Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 11 lines 14 to 68 and columns 12 and 13 and column 14 lines 1 to 37.

5. Regarding claims 5 and 16 – Schiff discloses wherein said bandwidth controller further includes a filter having an adjustable bandwidth for maintaining said adjustable range based on said correction signal, refer to Figures 7a and 7b and column 9 line 46 to column 11 line 13.

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6. Regarding claim 6 – Schiff discloses wherein said filter is responsive to said bandwidth signal from said bandwidth calculation mechanism, refer to Figures 7a and 7b and column 9 line 46 to column 11 line 13.

7. Regarding claim 8 – Schiff discloses wherein said bandwidth controller further includes a voltage controlled oscillator responsive to said filter for generating said adjusting signal, refer to Figures 7a and 7b and column 9 line 46 to column 11 line 13.

8. Regarding claims 9 and 18 – Schiff discloses wherein said transfer function comprises a continuous function, refer to Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 11 lines 14 to 68 and columns 12 and 13 and column 14 lines 1 to 37.

9. Regarding claim 12 – Schiff discloses a method for use with a receiver equipped to receive a CDMA communication signal transmitted on an RF carrier frequency, demodulate said RF carrier frequency to provide a received information signal, and correct phase errors in an information signal which has been modulated on said RF carrier frequency, refer to Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53.

Schiff discloses generating a mixing signal, Figures 5 and 6 and column 7 lines 5 to 68 and column 8 and column 9 lines 1 to 45.

Schiff discloses combining said mixing signal with said information signal to produce a correction signal, Figures 5 and 6 and column 7 lines 5 to 68 and column 8 and column 9 lines 1 to 45.

Schiff discloses analyzing the phase of said correction signal, refer to Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 11 lines 14 to 68 and columns 12 and 13 and column 14 lines 1 to 37.

Schiff discloses generating an error signal based on the deviation of the analyzed phase from a reference phase, refer to Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 11 lines 14 to 68 and columns 12 and 13 and column 14 lines 1 to 37.

Schiff discloses recursively adjusting the phase of said correction signal such that the phase of said correction signal is substantially equal to said reference phase, refer to Figures 5 and 7 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14 lines 1 to 37.

Schiff discloses selecting a bandwidth within an adjustable range based on said correction signal, estimating an offset by interrogating said error signal and modifying said correction signal by said offset, refer to Figures 5 and 7 and 9 and 10 column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14.

10. Regarding claim 20 – Schiff discloses (a) comparing the incoming signal with a correction signal to produce an error signal, refer to Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 11 lines 14 to 68 and columns 12 and 13 and column 14 lines 1 to 37.

Schiff discloses (b) normalizing the error signal into a normalized signal, refer to Figures 5 and 7 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14 lines 1 to 37.

Schiff discloses (c) analyzing the normalized signal to determine a quantized phase error signal, refer to Figures 5 and 7 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14 lines 1 to 37.

Schiff discloses (d) generating a control signal in response to the quantized phase error signal, refer to Figures 5 and 7 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14 lines 1 to 37.

Schiff discloses (e) adjusting the bandwidth of a PLL filter in response to the quantized phase error signal and the control signal, wherein the PLL filter generates an error voltage, refer to Figures 7a and 7b and column 9 line 46 to column 11 line 13.

Schiff discloses (f) sending the error voltage to a voltage controlled oscillator to generate the correction signal, refer to Figures 7a and 7b and column 9 line 46 to column 11 line 13.

Schiff discloses (g) repeating steps (a) through (f) while the incoming signal is being received, refer to Figures 5 and 7 and 9 and 10 column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14.

11. Regarding claim 24 – Schiff discloses a comparison mechanism for comparing the incoming signal with a correction signal, said comparison mechanism producing a complex error signal having an I (in phase) component and a Q (quadrature) component, refer to Figures 5 and 8 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 11 lines 14 to 68 and columns 12 and 13 and column 14 lines 1 to 37.

Schiff discloses a processing mechanism for normalizing the complex error signal and producing a quantized phase error signal, refer to Figures 5 and 7 and 9 and column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14 lines 1 to 37.

Schiff discloses a phase-locked loop filter having an adjustable bandwidth, said phase-locked loop filter generating an error voltage in response to the quantized phase error signal, refer to Figures 7a and 7b and column 9 line 46 to column 11 line 13.

Schiff discloses a voltage controlled oscillator for generating a correction signal in response to the error voltage, refer to Figures 7a and 7b and column 9 line 46 to column 11 line 13.

Schiff discloses a bandwidth adjustment mechanism for controlling the bandwidth of said phase- locked loop filter, said bandwidth adjustment mechanism generating a control signal for controlling said phase-locked loop filter in response the quantized phase error signal, refer to Figures 5 and 7 and 9 and 10 column 7 lines 5 to 68 and column 8 lines 1 to 53 and column 9 lines 45 to 68 and column 10 and column 11 lines 1 to 13 and column 13 lines 3 to 68 and column 14.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

III. Claims 10 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schiff (same as above).

1. Regarding claim 10 – Schiff discloses a receiver for receiving a CDMA communication signal transmitted on an RF carrier frequency and demodulating said RF carrier frequency to provide a received information signal, refer to the abstract and Figures 1 and 5.

Schiff does not expressly disclose wherein said look-up table comprises a matrix of at least eight discrete in-phase component values by at least eight discrete quadrature component values.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize a matrix of at least eight discrete in-phase component values by at least eight discrete quadrature component values. The suggestion/motivation for doing so would have been that Schiff discloses a lookup table of in-phase and quadrature values and utilizing at least eight values for each would provide a range of values for the error correction phase. The benefit being that a smoother control of the phase would be achievable.

2. Regarding claim 25 - Schiff discloses a receiver for receiving a CDMA communication signal transmitted on an RF carrier frequency and demodulating said RF carrier frequency to provide a received information signal, refer to the abstract and Figures 1 and 5.

Schiff does not expressly disclose a lag filter for receiving the control signal and the quantized phase error signal as inputs and, in response thereto, generating estimates of phase error relative to a predetermined value and a lead filter for generating an error voltage in response to the phase error estimates.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize a lag filter and a lead filter in order to insure the control loop is stable over the operating range and not subject to instabilities. The benefit being that the control loop will provide the optimum performance.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Dobrica (US 5,875,215) discloses a carrier synchronizing unit.
2. Ling et al. (US 5,619,524) discloses method and apparatus for coherent communication reception in a spread-spectrum communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pezzlo whose telephone number is (571) 272-3090. The examiner can normally be reached on Monday to Friday from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou, can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

Any response to this action should be mailed to:

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For informal or draft communications, please label "PROPOSED" or "DRAFT"

Hand delivered responses should be brought to:

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John Pezzlo

26 October 2004



JOHN PEZZLO
PRIMARY EXAMINER